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This objection I have shown, in *The Origin of the Stars*, to be founded on at least three groundless assumptions; founded, in fact, on our ignorance. It pretends to say that the materials of the sun, pound for pound, can give out no more heat than the materials of the earth. It pretends to say that the physical forces, all alive in the sun, can produce no more heat in connection with chemical combination than in our laboratories. It pretends to say that in the condensation of the sun no new chemical elements can be produced to serve as new fuel. It pretends all this in profound ignorance of what it ought to know for such assertions. On the contrary, I have shown various probabilities that the vastly different materials of the sun give out unspeakably more heat. I have shown various probabilities that all the physical forces alive together in the sun can produce more heat in connection with chemical combination than in our little laboratories. I have shown, what seems to me conclusive proofs, that new chemical elements are now forming in the sun to serve as new fuel. These probabilities I do not call my demonstration. But beyond all this I have given, as my special demonstration, large numbers of facts and arguments, derived from the earth, the sun and the fixed stars, to prove that solar heat springs from chemical action. Until some one in the scientific world attempts to answer my facts and arguments, I need say nothing further.

There are many other objections to the mechanical theory, but I think quite enough have here been given to put the discussion at rest forever.

Descriptions of Five New Species of Central American BIRDS.

BY GEO. N. LAWRENCE.

1. *GLAUCIS AENEUS*.

Front and top of the head dull brown, upper plumage besides of a shining coppery bronze, the upper tail coverts are rather more bronzy, with dull grayish margins; the two central tail feathers are of a dull pale bronzy green, the other tail feathers are chestnut at base, with a broad subterminal band of black, all of them end in white; ear coverts black; a pale rufous stripe runs from the bill under the eye, and there is a postocular mark or streak of the same color; a dusky line extends from the under mandible down each side of the neck; the entire under plumage and under tail coverts are of a clear rufous; upper mandible black, the under is dull yellow for two-thirds its length, with the end black; feet pale yellow.

Length (skin) $4\frac{1}{2}$ in.; wing 2 1-16th; tail $1\frac{1}{4}$; bill $1\frac{1}{4}$.

Habitat.—Costa Rica. Collected by A. R. Endrés. Type in Museum of Smithsonian Institution.

Remarks.—This species differs from *G. hirsuta* and its allies in the bronzy coloring of its upper plumage, and also in being smaller; in the well marked band on the tail feathers it is much like *G. affinis*, but the color of the band is of a deeper black, not bluish black; the tail feathers are narrower than in *affinis*, and the under tail coverts more rufous.

Several specimens examined vary only in some having their upper plumage more of a golden bronze, others being more coppery; none have the under mandible of a clear yellow, some scarcely showing that color, the bill appearing to be entirely black.

2. *EUPHERUSA NIGRIVENTRIS*.

Fore part of the head as far as upon a line with the back part of the eyes, and the entire under surface deep velvety black; occiput dull ashy brown, upper plumage grass green tinged with golden; upper tail coverts of a dull coppery bronze; the four central tail feathers blackish purple, the three lateral on each side pure white; primaries brownish purple; the wing coverts green like the back; the secondaries are chestnut at the base with their ends

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purple; sides under the wings dull green; the vent and under tail coverts white; bill black; feet yellowish.

Length (skin) $3\frac{3}{4}$ in.; wing 2; tail $1\frac{1}{4}$; bill $\frac{5}{8}$.

Habitat.—Costa Rica. Collected by A. R. Eudrés.

Type in Museum of Smithsonian Institution.

Remarks.—The combination of colors in this bird is of an unusual character, and I know of none which it at all resembles. I consider it strictly congeneric with the species heretofore placed by me in *Eupherusa*, viz., my *E. cupreiceps* and *Thaumantias chionurus* of Mr. Gould. In the present species the character of the secondaries being chestnut, I think strengthen its claims to an alliance with *E. eximia*.

3. THAUMANTIAS LUCIÆ.

Upper plumage of a dull bronzy dark green, the crown duller; the upper tail coverts of a lighter bronzy green, somewhat golden; the tail feathers are dull bronzy green, all except the two central ones are broadly marked near their ends with dark purplish bronze, the tips being ashy gray; the throat and breast are glittering bluish green, middle of the abdomen white; the under tail coverts are light olive margined with white; wings brownish purple; upper mandible black, the under yellow with the end blackish; feet black.

Length (skin) $3\frac{3}{4}$ in.; wing $2\frac{1}{2}$; tail $1\frac{3}{4}$; bill 13 16ths.

Habitat.—Honduras.

Remarks.—In size and colors of the body this species is much like *T. Linnaei*, but the tail is quite different, and closely resembles, in the coloring of its under surface, that of *T. chionopectus*.

This was the only specimen in the collection from which I obtained it, but there were many specimens of *T. candidus*.

This species is dedicated to Miss Lucy Brewer, daughter of my friend Dr. Thomas M. Brewer, of Boston.

4. DROMOCOCCYX RUFIGULARIS.

Head above and entire upper plumage rich dark brown of a purplish lustre; the tips of the feathers on the head, back and wing coverts are sparingly marked with minute spots of pale rufous, some of the larger coverts are more rufous at their ends, the color extending for some distance along the shafts; the upper tail coverts, which are much lengthened, are of a duller brown than the back, they have a greenish gloss, and are margined with dull gray; the tail feathers are much the same in color as the back, and are narrowly edged on both webs with very pale rufous; the tail underneath is of a clear grayish ash, with the shafts of the feathers white, and the edges of the feathers narrowly marked with whitish; quill feathers brown, with their shafts white underneath, and the inner webs marked with white at the base; a postocular stripe of light rufous extends to the hind neck; ear coverts dark brown; sides of the neck, throat and upper part of the breast rufous, paler on the throat and deeper in color on the breast, on the latter some of the feathers have their edges narrowly marked with black; the color of the breast connects with the rufous stripe running back from the eye; the remaining under parts with the under tail coverts, white; the greater part of the upper mandible is black, the edges together with the under mandible being yellow; tarsi and toes brown, soles of the feet yellow.

Length (skin) $10\frac{1}{2}$ in.; wing 6; tail $6\frac{1}{2}$; tarsi $1\frac{1}{2}$; bill $\frac{5}{8}$.

Habitat.—Guatemala. Obtained from Dr. C. H. Van Patten, who had no knowledge concerning it, except that it came from a high mountain region.

Remarks.—This species is much smaller and of a more delicate form than *D. phasianellus*, Max. (*D. mexicanus*, Bp.), and is quite different in coloration, that having the crown and crest dark cinnamon, the wing coverts conspicuously edged with whitish, the postocular stripe nearly white and the throat and upper breast spotted and streaked with black; the feet in the new species are much weaker.

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5. ARAMIDES ALBIVENTRIS.

Occiput and part of hind neck brownish cinnamon; chin and throat whitish; fore part of the head and crown, with the neck behind and in front of a clear bluish gray; back and wings greenish olive; rump, tail, flanks, abdomen and under tail coverts black; thighs smoky black; quills bright reddish cinnamon; under wing coverts dull pale cinnamon, with blackish bars; breast pale cinnamon, this color extending round partly on the back; the elongated feathers of the breast, which extend down the sides of the abdomen are white, and form a conspicuous broad mark in shape of the letter U inverted, which contrasts strikingly with the reddish and black colors above and below it; the bill is orange as far as the nostrils and pale greenish yellow at the end; the legs appear to have been light vermillion.

Length about 21 in.; wing $7\frac{1}{2}$; tail $2\frac{1}{2}$; bare part of tibia 1; tarsi 3; bill $2\frac{1}{2}$.

Habitat.—British Honduras.

Remarks.—I have had the above described specimen for some time, and considered it to be a new species, but delayed publishing it. I have recently obtained another precisely like it, that came from Guatemala.

It differs from *A. Cayennensis*, Gm., in the breast being of a pale instead of a deep cinnamon red, and in having the white mark on the abdomen.

Additional Note on the "CHINCH-BUG."

BY HENRY SHIMER, M. D.

The "Chinch-bug" has entirely disappeared from this region, so far as I have been able to observe. I have made diligent search since spring, with the object of obtaining a few living specimens, but up to this time have not succeeded in finding a single specimen. I am convinced that the efficient cause of their entire destruction exists in the continuation of the epidemic among them. Their overthrow is a cause of great rejoicing among the farmers. And once more, as of yore, they have realized a bountiful wheat harvest. I have but one thing to regret in their annihilation; I neglected to obtain a good supply of specimens, while they might have been secured by the wagon load.

Mt. Carroll, Ill., Sept. 16, 1867.

Prof. Cope gave an account of the extinct reptiles which approached the birds. He said that this approximation appeared to be at two points. The first by the Pterosauria, to which the modified bird Archaeopteryx presented points of affinity. The second, and one not less striking, is by the Dinosauria of the orders Goniopoda and Symphypoda. He showed the essential differences between the ordinary Dinosauria and the birds to consist in the distinct tarsal bones in two series, the anteriorly directed pubes, and the presence of teeth, of the first class. In the genus *Laelaps* Cope, type of the Goniopoda, the proximal series of tarsal bones was principally represented by one large astragaloid piece which had a very extensive motion on those of the second series. This was immovably bound to, and embraced, the tibia, and was perhaps continuous with the fibula, much resembling the structure of the foot of the chick of the ninth day, as given by Gegenbaur. The zygomatic arch was of a very light description. He was convinced that the most bird-like of the tracks of the Connecticut sandstone were made by a nearly allied genus, the *Bathynathus* Leidy. These creatures, no doubt, assumed a more or less erect position, and the weight of the viscera, etc., was supported by the slender and dense pubic bones, which were to some extent analogous to the marsupial bones of Implacental Mammalia, though probably not homologous with them.

He said he was satisfied that the so-called clavicles of *Iguanodon* and other Dinosauria were pubes, having a position similar to those of the Crocodilia.

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